**Minutes of the 2021 Virginia Aviation & Aerospace Summit**
**October 13, 2021**

**9:00a.m. Welcome by Kurt Eberly and introduction for Frank DeMauro, VP and General Manager Northrop Grumman**

**Frank DeMauro:** Anything is Possible with partnering!

DeMauro welcomed everyone to the Dulles campus of NG, a multi-building facility since 2001 providing tactical space systems to grow aerospace and orbital sciences and to provide satellite services for NASA and national defense.

NG chose this area of the Commonwealth particularly for the capabilities in education that attract top employees. NG employees 6,300 staff members at this campus and has 1,400 suppliers in the region.

Projects:

NG serves as Mission Control for Cygnus spacecraft that carry cargo to the ISS (International Space Station); 14th Cygnus mission was launched into space by the NG Antares rocket in October 2020; launch site: MARS (Mid-Atlantic Regional Spaceport) at NASA's Wallops Flight Facility in Virginia.

James Webb Telescope: NG is the industrial leader for the largest & most complex and powerful space telescope ever built; capable of peering 13.5 billion years into the past when the first stars and galaxies were forming to discover how the universe began; project encompassed 258 companies to invent and develop from scratch NASA's top science mission.

B-21 Bomber: an advanced aircraft that is able to penetrate the toughest defenses to deliver precision strikes anywhere in the world.

GBSD –Ground Based Strategic Deterrent in partnership with the U.S. Air Force utilizing cutting-edge innovations in digital engineering to design and produce this modern strategic deterrent capability

**Del. Mark Sickles introduced Jeff McKay, Fairfax County Board Chair**

**Jeff McKay**

Expressed gratitude for STEM and the work in science that is being done.

80% of Fairfax Co. residents are vaccinated; 83.5% of the county's children are vaccinated; both dramatically impact the area's economy (throughout industries such as travel, hospitality, security, etc.)

The Dulles corridor is the economic engine with 8,600 technology companies; 150,000 technology employees; and $15.3 billion being spent on innovation, science, technology, and aviation.

24 million passengers traveled through the Dulles International Airport in 2019.

There are 190,000 students in the area, and they are the future; we need to continue to develop science camps, reach out to community colleges, and embrace technology.

From Fairfax County's 28,000 students, 'Alex' won the top award for naming the Mars vehicle; he named the mission 'Perseverance.'

**Del. Sickles introduced Stephen Moret, VEDP CEO**

**Stephen Moret**

The Virginia Economic Development Partnership supports aerospace, manufacturing, and defense companies.

42,000 personnel have security clearances

Virginia is growing faster than any other state

Washington, California, and Texas have the most jobs

Virginia is catching up in business development: but we still need to develop and offer large incentives, ready sites, and skilled workforce and training.

*****Governor Northam's Arrival**

**Governor Northam**

Introduction for the Governor included informative details regarding his military and medical background and contributions.

The Governor thanked Secretary Valentine, Secretary of Labor Healy, directors of workforce development, including Moret, McKay, Simonds, Mercer, Flynn, recognizing them as Virginia's leaders. He named a few major projects and successes, including the Virginia and Aerospace programs on the Eastern Shore, M.A.R.S., etc. Wallops Island supports 1,900 jobs with a $1.3 billion economic impact that is driving further growth.

VA Space has performed 7 re-supply missions; Rocket Lab – electron, neutron lunches; UAS – has a #1 ranking; aviation – grants, new routes, Breeze, etc. – great potential for growth! AAM – advanced air mobility and moving people; Virginia has the technology that speeds advancements. The future is here.

**Secretary Valentine** - the Transportation Secretariat manages 8 modes of transportation in the Commonwealth, has a $5 billion budget, and employs 10,000 people. The Secretary thanked Mark Sickles and other leaders, including the Department of Aviation. "We are living in an exciting time for aerospace and aviation inspiration, collaborations, partnering."

Her husband is a cardiologist, and the Secretary received an honorary degree on June 15 – a doctorate in rocket science.

We must diversify and expand. There is a $22 billion impact on aviation, remote air traffic controllers, investments, SAF work in progress; and she foresees a Clean Energy Act by 2045 – all of which requires us to be diligent.

**Speaker Moret**

The Commonwealth has fierce aerospace, technology, and aviation competitors. To improve our standing, we need workforce development, retail sales, land-use tax exemptions, market assets, and solid relationships. Examples: UAS Hangar, Virginia Talent Accelerator Program – recruit, screen, and develop!

Obstacles for Virginia (result in lost projects) – we need prepared sites of 250+ acres, incentives, marketing. We have the raw land (T 1, 2 and 3), but no T 4-5 – large sites). The state shares the cost of development; incentives are not the focus, and Virginia has the lowest land development record compared to other states, which are realizing a higher return on their investments. There is a lack of marketing Virginia assets for manufacturing. From a national survey, Virginia is behind corporate executive and site consultants.

Comments: **Donna Lawson** – marketing our supply chains may help to close the gaps as well as trade shows. Project wins equal free marketing.

**Moret**: solutions: software, UAS/cyber development and more emphasis on manufacturing; computer sciences provided to smaller regions and rural areas improve.

**<u>Panel Discussions</u>**

**Secretary Megan Healy** – Virginia is diverse with childcare and transportation options, high retention rates, workforce training, and employable skills. She oversees a range of regional, state, and federal programs that connect Virginians to the skills, training, and opportunities they need to thrive in the 21st century economy. Healy also partners with state government leaders to develop accessible pathways into high-demand jobs.

**Mary Sandy** – explained the wealth of Virginia's education opportunities, summer programs, and financial assistance from NASA. Current VA Space Grant Consortium members can nurture and mentor students and help them find their passion; interface in the workplace; and immerse students with personal and professional skills.

Technology Exploration: Grades 7-8

BLAST – Grades 9-10 and college campuses

Pathways Flight Academy – a residential 12-day based program that is getting students involved in learning and applying what they learn.

**Alison Colangelo, Director of HR for Northrop Grumman Space Systems**

Northrop Grumman is finding that today's new employees have strong leadership skills. NG is bringing on and keeping new hires; recruiting for entry-level positions and recent graduates; and providing internships (100+) each summer with real assignments and creating a rotational pathways system as well as a technology rotation system to improve learning and build bridges to develop skills.

The company has initiated a 'returnship' to help employees who have had time away from the workforce transition back into a work environment – the program is designed to help them bridge the gap.

NG also helps to formulate and facilitate resource groups of 30 employees. These groups strive to provide small niches, helping them to connect with others, and to fit in. NG visits community colleges, trade schools technology centers, etc., to influence curricula. NG has the most hires from George Mason University, James Madison University, Virginia Tech, and the University of Virginia. They look at the top 20 skills, including competency and career paths; they believe that understanding diversity begins in grade school – many of their employees volunteer at local schools.

Question to Secretary Healy: are we reaching all students in Virginia? Is the process equitable?

1. Training at NASA (response from Mary Sandy); study of demographics; broadband accessibility; ambassadors – returning students help with transportation to get the students there. Emphasis on training schools with an FAA grant pending
2. NG – community-minded; connect with a wide range of school locations
3. Tom Michels – United: branching out more with hiring and developing maintenance personnel, technicians, and mechanics.

Security clearances and cyber intelligence: we should start earlier to work with security teams and professional development and acknowledge our fear about it.

Secretary Valentine: we can do better with reaching the private sector. Parents are returning to school, and we can build connectivity and passion, and develop paths within education establishments.

**Lunch -- Video from Sen. Tim Kaine**

Space Exploration! Commitments to education, young leaders, job training.

**Maj. Gen. Ted Mercer, Virginia Commercial Spaceflight Authority**

Recognized Kim Read, Chief of External Communications, and Sean Mulligan, COO

Background: leadership, support, and geography

Spaceports are not all the same; Wallops Island is the backup for Cape Canaveral, and we are one hurricane away from that happening. Missions to the moon and the International Space Station.

Commercial Space Flight Authority: M.A.R.S. is a national asset.

Launch ports belong to Virginia:

Pad A: NG Antares liquid fuel carried 18,000 pounds to the space station

Pad B: solid-fueled rocket, Minotaur, capable of carrying 8,400 pounds

Pad C: electron, venture class capable of transporting 661 pounds.

(Initial velocity – launches from Pad A are slower.)

Facilities:

- M.A.R.S. payload processing facility worth $28 million to Virginia IT Infrastructure Partnership
- USX test range – safe air space for testing
- 100 employees who facilitate launches; hands on value – they do it all – up to and post launches; 22% are women – helping to provide equity and inclusion
- Core values: integrity, respect, service, excellence
- Interns – 20% find real work and hired by NG
- Next: Z41 facility to be ready in one year with a workshop, storage, meeting spaces, and a neutron rocket capable of a payload of 8,800 pounds
- Wallops has purchase 28 acres to build a manufacturing facility - land that once was a chicken farm
- Port: M95 intermodal barge service needed; pursuing grants
- Sustainability – cutting costs $52 million in the first stage was re-usable.

**<u>Sustainability Panel</u>**

**Dr. Michael Patterson – NASA Langley**

- Safe, sustainable, accessible, affordable missions. New things with aircraft – as accessible as a car – a game changer
- Uber – Aviation; design – all electric, hybrid; pilots will have reduced qualifications
- UAM – 50-75 miles, Urban, Small UAS; RAM – regional and will utilize existing Virginia airports with 6-19 passenger seats
- Sustainability – ability to be maintained; environmental and economic benefits (one mile of road travel vs one mile of runway)
- Electric charging grids (infrastructure)
- Solar panels – renewable energy
- Landing spaces, verti-ports, FAA working on guidelines.

**Thomas Michels – United Airlines**

- Climate change, gas emissions, flying efficiency – oil is highly efficient
- Hard to electrify a large plane
- Car: 42 miles per hour
- Plane: 388 miles per hour

- Car: 70 miles per gallon
- Plane: 65 miles per gallon
- Air taxis – short hops
- Decarbonization: net zero by 2050
- Sustainable aviation fuel – world energy using French fry oil and waste products show a 70 percent reduction in carbon
- Carbon capture – a company in Texas sucks out carbon from the air and pipes it to aquifers
- Crop-based oils are not as effective in reducing carbon emissions, as well as wood waste and garbage 'fluff'
- To make diesel more attractive, we need more incentives – ground fuel; need higher tax credit to produce jet fuel
- 270 new aircraft purchase that have better, improved efficiencies.

**Victoria Cox, V Cox Solutions and Virginia Aviation Board**

Next Gen air transportation systems are improving and changing airspace configurations to be safer and are being developed in 12 metro areas to help gridlocks at airports. There are 29.4 million square miles of airspace in the United States, and there is a need for air traffic management. Aircraft burn less fuel at higher altitudes.

- CPDL – Controller Pilot Data Link Communications
- CLEEN – Phase 1 research projects

Question: IT systems: hardware

Public acceptance, comfortable with no pilot (the first leap has been driverless cars, autonomous vehicles, and air shuttles). There is more automation coming; innovation gradually progressing forward; a steady march! There is a need for more public awareness, testing, exposure through demonstrations, and determine corridors.

**Closing remarks by Del. Mark Sickles**

**Adjourn**

**GAAC members tour NG facility**